	Hemodialysis (HD) Day	1 day Post-HD	2 days Post-HD	Normal Controls
Vector Magnitude Daily Average (Counts/Day ± SD)	347122 ± 135299	389077 ± 168033	417870 ± 174145	651685 ± 58283†
P-Value relative to day of HD (2-tailed)		0.138	**0.015***	**< 0.001**

intimal-medial thickness (CIMT) is non-invasive modality used to evaluate subclinical atherosclerosis and to predict future cardiovascular disease. The objective of this study is to evaluate the association between apo B/A1 and CIMT in chronic kidney disease (CKD).We retrospectively reviewed the 293 patients who had visited health promotion center in a single community. The patients were divided into 2 group which are CKD group (n=99, estimated glomerular filtration rate (eGFR): 15-59 mL/min) and non-CKD group (n=194, eGFR ≥ 60 mL/min). Age, sex, presence of diabetes mellitus (DM)/hypertension, smoking status, eGFR, body mass index, and various biochemical blood examinations (serum LDL/HDL cholesterol, serum homocystein, and serum apo B/A1 ratio) were evaluated in each patient. CIMT was measured by high-resolution B-mode ultrasonography. Multivariate linear regression analysis was performed to investigate which factors are associated with CIMT in each of 2 groups. In CKD group, age (β=0.163, p=0.024), presence of hypertension (β=0.208, p=0.006), and presence of DM (β=0.236, p=0.002) were independently associated with CIMT adjustment for other confounding factors. However, in CKD group, serum apo B/A1 (β=0.572, p < 0.001), presence of HTN (β=0.360, p=0.001), and presence of DM (β=0.194 p=0.023) contributed to CIMT independently after adjustment for other confounding factors.

In conclusion, this study showed serum apo B/A1 ratio was independently associated with CIMT only in CKD group, not in non-CKD group. Because CIMT is a strong predictor of CVD, the result of this study demonstrates serum apo B/A1 ratio could be included in cardiovascular risk stratification in CKD patients

http://dx.doi.org/10.1016/j.krcp.2012.04.441

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DAILY PHYSICAL ACTIVITY (DPA) IS MARKEDLY REDUCED IN MAINTENANCE HEMODIALYSIS (MHD) PATIENTS

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patients are considered to be physically less activity than normal, but there are only few studies on this question. We measured DPA over 7 days, with the new Actigraph GT3X+ Activity Monitor®, on 63 patients receiving MHD 3Xwk for ≥6 months and 36 matched normals. Patients were 52 ± 14SD years, 30% female; 35% diabetic; dialysis vintage, 61 ± 47 mos. Normals were 49 ± 12 years, 42% female, with similar racial/ethnic mix. The average daily vector magnitude for DPA, calculated as the square root of the sum of the squares of the three dimensional axes, was much lower in MHD, 398,868 counts (counts include HD days), vs. Normals (651,685 counts, P < 0.001). In MHD vs Normals, % time in sleep or marked physical inactivity was 81% vs 73% (P < 0.001); % time in ≥moderate activity, 4.0% vs 7.0% (P < 0.001). In MHD, there was a trend toward increasing physical activity as patients progressed from the HD day to one day and then two days post-HD (Two days post-HD vs. HD day, p=0.015). This trend might be due to reduced activity in the HD unit, increased physical activity on weekends, or exhaustion from HD. Thus, compared to matched normal adults, MHD patients have markedly reduced DPA. Since study subjects had to be willing and able to complete physical performance tests, the most debilitated MHD patients were not recruited to the study. Hence, decreased DPA in MHD patients might be even greater than observed.

http://dx.doi.org/10.1016/j.krcp.2012.04.442

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BODY COMPOSITION IN HEMODIALYSIS AND PERITONEAL DIALYSIS PATIENTS

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Bioimpedance analysis is a reliable technique for determining post dialysis target weight. Using this technique, we can understand body fluid status easier and conveniently. Moreover this technique can be used for check nutrition status and nutritional status of dialysis patients. We compared the body fluid status and nutrition status between hemodialysis (HD) patients and peritoneal dialysis (PD) patients by BCM (Body composition monitor) technique. We studied 48 (30 males and 18 females) PD patients, 21 (10 males and 11 females) HD patients. Body composition monitoring (BCM, Fesenitus Medical Care, Germany) was used as a tool for the analysis of bioimpedance. Extracellular water, Total body water, Intracellular water, Overhydration, E/I, Lean tissue mass, Fat Tissue mass was measured and those results were compared between two groups. HD patients were more hydrated than PD patients (61.9% vs. 35.4%) and nutritional status such as LTI was poorer than peritoneal dialysis patients (11.7 ± 1.7 vs. 15.3 ± 2.6). Although total body water is more abundant in peritoneal patients (29.4 ± 5.5L vs. 35.9 ± 6.2L), Extracellular water and intracellular water ratio was relatively higher in Hemodialysis patients (E/I 0.98 ± 0.13 vs. 0.87 ± 0.12). The nutrition status was better in PD patients by comparing the percent of lean tissue mass (LTM%) between two groups (LTM% 52.1 ± 10.6% vs. 66.8 ± 11.3). In conclusions, Hemodialysis patients were more hydrated with poorer nutrition status than peritoneal dialysis patients, but, due to the significant difference of age between two groups, further study should be required.

http://dx.doi.org/10.1016/j.krcp.2012.04.443

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THE CHALLENGE OF PD PATIENTS: GLUCOSE AND GLUCOSE DEGRADATION PRODUCTS IN PD SOLUTION

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The main osmotic agent found in the peritoneal dialysis (PD) solution is glucose. It has been of a wide use for great crystalloid osmotic power at a low concentration, simple metabolism, and excellent safety. On the other hand, anywhere between 60 to 80% of the glucose in the PD solution is absorbed - a 100 to 300 mg of daily glucose absorption. Once into the systemic circulation, glucose can be a cause for metabolic complications including obesity. Indeed, the diabetiform change observed in the peritoneal membrane in the long-term PD patients is believed attributable to the high-concentration glucose in the PD solution. The glucose absorbed from peritoneal cavity raises the risk of 'glucose toxicity', leading to insulin resistance and beta cell failure. Clinical similarity can be found in postprandial hyperglycemia, which is known to be associated with oxidative stress, endothelial dysfunction, NF-κb, and inflammation, affecting myocardial blood flow. Moreover, it is a proven independent risk factor of coronary artery disease in patients with type 2 diabetes, particularly of female gender. Though speculative yet, glucose toxicity might explain a higher mortality of PD patients after the first year compared with those on hemodialysis (more so in female, advanced-age patients with diabetes). Also included in the picture are glucose degradation products (GDPs) generated along the course of heat sterilization or storage of the PD solution. They have been shown to induce apoptosis of peritoneal mesothelial cells, renal tubular epithelial cells, and endothelial cells, while spurring production of TGF-β and VEGF and facilitating epithelial mesenchymal transition. GDPs provide a stronger reactivity than glucose in the formation of AGEs, a known cause for microvascular complications and arteriosclerosis. Unfortunately, clinical studies using a low-GDP PD solution have provided mixed results on the residual renal function, peritonitis, peritoneal membrane function, and mortality, and consistent outcome data are hardly available at present.

http://dx.doi.org/10.1016/j.krcp.2012.04.444

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TISSUE CELL INTEGRITY IS AN IMPORTANT DETERMINANT TO PREDICT MUSCLE STRENGTH IN PATIENT IN POST STROKE REHABILITATION

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Physical disability is a common result and a major complication after stroke. The skeletal muscle is the main effector organ accountable for this disability. Yet, metabolic, structural and functional impairment of muscle tissue are not recognized as potential targets to improve post-stroke rehabilitation and remobilisation. We aimed to investigate metabolic and structural characteristics of the lean tissue as predictors of muscle function in patients after acute stroke. We studied 40 patients (age 68 ± 12y, BMI 27 ± 4, mean $\pm$ SD) at the beginning of post-stroke hospitalized rehabilitation. All patients had paretic or plegic deficits of the limb due to acute stroke. Maximum isometric handgrip strength was measured in the stronger / non-paretic arm by a dynamometer. Lean tissue characteristics were assessed by whole body impedance analyses (BIA). Resistance (tissue hydratation, R/H) and reactance (cell integrity, Xc/H) were assessed and phase angle (phase-α) vector analyses were performed to evaluate lean tissue quality. Patients were grouped into tertials for muscle strength (hand grip in tertial 1/2/3: 17.07 ± 4.10 N / 28.33 ± 2.84 N / 41.21 ± 7.97 N). Tertials were similar for BMI and age. Lean tissue quality measures increased stepwise with muscle strength tertials (phase-α in tertial 1/2/3: 4.28 ± 0.84 / 4.80 ± 1.06 / 5.51 ± 0.91; ANOVA $p=0.0064$). Univariable regression analysis showed a significant association between muscle strength and tissue structure characteristics (R/H: $r=0.48$, $p=0.0016$; phase-α: $r=0.55$, $p=0.0002$). After multivariable adjustment for age and BMI, R/H and phase-α remained significant predictors of muscle strength (R/H: joint $r=0.65$, $p=0.0009$; phase-α: joint $r=0.65$, $p=0.0009$).

In conclusion, poor lean tissue quality is a major determining factor to predict muscle strength in patients after stroke. Body impedance is an easy applicable tool to evaluate tissues metabolic and structural characteristics during post-stroke rehabilitation. BIA assessments may be helpful to support the rehabilitation process of patients after stroke by stressing the aspects of tissue quality.

http://dx.doi.org/10.1016/j.krcp.2012.04.445

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ASSOCIATION OF OBESITY WITH MORTALITY IN PATIENTS WITH VARIOUS STAGES OF NON-DIALYSIS DEPENDENT CKD (NDD-CKD)

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Obesity is associated with increased mortality in the general population, but with lower mortality in dialysis patients. It is unclear at what stage of CKD this reversal occurs. Furthermore, it is unclear if associations differ for body mass index (BMI) or the ponderal index (PI, the weight divided by the third power of height).

We examined all-cause mortality associated with categories of BMI and PI in a national cohort of 305,895 US veterans with NDD-CKD and $eGFR < 60$. Associations were examined in Cox models by CKD stages (3A through 5) adjusted for demographics, blood pressure and comorbidities.

Patients with BMI 30- < 35 had the lowest mortality (Table); mortality was higher for $BMI < 30$ in all groups. Mortality was higher in patients with $BMI > 35$ in CKD stages 3A-3B, but not in CKD stages 4 and 5. Results were similar for quintiles of PI (not shown). Obesity is associated with higher mortality in patients with early/moderate CKD.

In patients with advanced NDD-CKD the highest BMI and PI are associated with the lowest mortality, similar to dialysis patients. Using a more ideal measure of obesity (PI) confirms the paradoxical association of obesity with lower mortality in advanced CKD.

BMI (kg/m^2)	CKD 3A	CKD 3B	CKD 4	CKD 5
< 18.5	3.47 (3.23-3.71)	3.39 (3.08-3.72)	2.92 (2.48-3.46)	2.60 (1.57-4.30)
18.5- < 25	1.65 (1.61-1.70)	1.64 (1.58-1.69)	1.52 (1.44-1.62)	1.48 (1.26-1.73)
25- < 30	1.12 (1.09-1.15)	1.15 (1.12-1.19)	1.12 (1.06-1.18)	1.24 (1.07-1.44)
30- < 35	Referent	Referent	Referent	Referent
$> =35$	1.10 (1.06-1.14)	1.10 (1.06-1.15)	0.98 (0.91-1.06)	0.97 (0.78-1.20)

http://dx.doi.org/10.1016/j.krcp.2012.04.446

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THE ASSOCIATION OF PREALBUMIN WITH NUTRITIONAL MARKERS AND INFLAMMATION IN INCIDENT PERITONEAL DIALYSIS PATIENTS

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Prealbumin, also known as transthyretin, is generally a more sensitive marker for protein-energy status than albumin and it is reported as an independent risk for mortality in hemodialysis patients. We evaluated the association of prealbumin with other markers of nutritional status and inflammation and also the impact of prealbumin on survival in incident PD patients.

The data of 139 PD patients who started CAPD between January 2002 and November 2007 were analyzed. Laboratory data, dialysis adequacy and nutritional parameters were assessed at 3 months after PD initiation. Correlation between prealbumin and other nutritional parameters and inflammation were assessed. Cox proportional hazards regression was used to identify independent predictors of mortality.

The mean age of patients was 52.7 ± 16.0 years (male 62.6%). The patients with diabetes as a primary renal disease were 46.8%, and 34.6% of patients had cardiovascular diseases (CVD). The mean duration of follow-up was 50.0 (range 2-120) months. Prealbumin was positively correlated with serum Cr, serum albumin, transferrin, % lean body mass (LBM) and nPCR, but negatively correlated with SGA score, age, hs-CRP and serum glucose. Mortality was significantly higher in low prealbumin (< 30 mg/dL) group. In univariate analysis, age, diabetes, presence of CVD, SGA, low prealbumin (< 30mg/dL), high CRP (> 5 mg/L) were associated with patient survival. Multivariate analysis demonstrated that older age (age ≥ 55) (HR 3.002, CI 1.229-7.333), DM (HR 2.936 (1.431-6.026)), CVD (HR 2.902 (1.374-6.130)), high CRP (HR 2.232 (1.150-4.334)) were independent risk factors of mortality.

In conclusion, prealbumin has a good correlation with other nutritional markers. Older age, diabetes, CVD, high CRP were independent predictors for mortality in incident PD patients.

http://dx.doi.org/10.1016/j.krcp.2012.04.447

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HBA1C IS INDEPENDENT PROGNOSTIC FACTOR FOR ELDERLY ESRD PATIENTS

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The eldery constituted the fast growing segment of the end-stage renal disease (ESRD) population. However, the information about the elderly patients on hemodilaysis therapy is limited. We investigated outcomes and the prognostic factors for elderly patients who initiated hemodialysis.

We reviewed medical recodes and conducted survival analysis in elderly patients over than 75 years when they had started hemodialysis in single center between 1988 and 2010. We analyzed the survival time of elderly hemodialysis patients with Korean national health insurance data system.